



# What makes Ultra-low-price tour agencies survive in China tourism market?

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**Abstract.** Economic relationships between business units based on geographical Ultra-low-price tour (ULPT) is a trap that some travel agencies use to attract cost-sensitive travelers by offering an extremely low price and making them spend much more money during the trip. Government has taken measures to decrease the number of ULPT agencies, but did not succeed in eliminating them. Why is there still some ULPT agencies and why do tourists participate in those tour? This article offers an explanation from the dual perspective of both economics and psychology. By using the application of several models, it shows how ULPT agencies can survive by using low price. And the theory of Mental Accounting helps to explain why customers are likely to be attracted by ULPT agencies. Lastly, the article provides suggestions on how to reduce the negative impact and loss brought by ULPT agencies.

**Keywords:** Ultra-low-price tour; Evolutionary game theory; Hotelling model; Mental accounting; Tourism market

## 1 Introduction

In China, there are some travel agencies offering tours and trips at extremely low prices, sometimes even for free. Customers were attracted by price but soon found that they ended up spending more on trips than they would have spent on a properly priced tour. For example, at the beginning, tour guides won't tell people there will be a compulsory purchase. They tell tourists there will be a volunteer shopping activity. After visiting 1 or 2 tour sites, and they will drive directly to a souvenir shop located in a remote suburb area. In that case, nobody can leave unless he buys something, which could be much higher than other shops or with problems in quality. Tourists suffered a lot from those ULPT and travel agencies' normal operation are also disturbed. Because under the competitive pressure of ULPT agencies, they lost both customers and profits.

Government takes strict policy to punish those ULPT. However, regardless of how strict the laws are, some agencies still find loopholes and continue to practice such deception. This raises two questions:

1. Amongst the many good and honest travel agencies, how can ULPT agencies still survive in the market
2. Why people take part in tours that is obviously at an extremely price? The article just tries to answer these two questions.

## **2 Methodology**

### **2.1 Evolutionary game theory**

Evolutionary game theory was first developed by Fisher in 1930. In 1973, ecologist Maynard Smith firstly raised the concept of Evolutionarily stable strategies (ESS) based on the theories of biological evolution and classical game theory [1]. The key idea behind the concept of ESS is that the individual behaviours directly affect its Darwinian fitness, namely, its probability to survive, reproduce, and contribute to future generations. The best strategies lead to higher reproductive success, and thus, their frequency increases in the population across generations.

In the case of ultra-low-price tour, at the beginning, all travel agencies offer prices normally. The difference depends on the luxury level of the tour. Later, some agencies choose to offer prices lower than competitors. Some even operate so called Free Tour. Now, in the market, there are two groups: those still adopt normal price and those adopt ultra-low-price. The majority of the travel agencies are the former one, and the latter ones are minority. The competition between them just like evolution in biological systems, a process that happened repeatedly and gradually. In such circumstance, if there is a steady state, little interference cannot change it. Therefore, the question is whether the minor group be assimilated by the majority or they will always exist with a certain number.

According to Evolutionary game theory, supposing there are only two travel agencies in the market, and they have only two price strategies: normal price or ultra-low-price. They are competing with each other for customers. If they both choose normal price, the payoff is (a,a), and if they both choose ultra-low-price, the payoff is (d,d). If one of them chooses normal price, meanwhile, the other one chooses ultra-low-price, the one chooses normal price gets a payoff of b, while the one chooses ultra-low-price gets a payoff of c. The payoff matrix is shown as Fig. 1.

		Player 2	
		normal price	Ultra-low-price
Player 1	normal price	$a, a$	$b, c$
	Ultra-low-price	$c, b$	$d, d$

**Fig. 1.** The payoff matrix of the two agencies.

Now, considering the whole market as 1, and among which,  $x$  agencies choose normal price, the left  $(1-x)$  agencies choose ultra-low-price. The former one's expected benefits is

$$U1 = ax + (1-x) b$$

For those  $(1-x)$  agencies, the expected benefit is:

$$U2 = cx + (1-x) d$$

The average expected benefit of the whole travel agency group is:

$$= xU1 + (1-x) U2$$

Since this is a long-term repeated game, the Replicator Dynamic Function is:

$$F(x) = x (1 - x) [x (a - c) + (1 - x) (b - d)]$$

It has three steady states, namely:

$$x^* = 0$$

$$x^* = 1$$

$$x^* = \frac{(d - b)}{(a - c + d - b)}$$

According to Evolutionary Game Theory, the ESS strategies require  $F'(x) < 0$ . Therefore, there are four key points: payoffs when all travel agencies choose normal price; payoffs of normal side when normal price compete with ultra-low-price; payoff of ultra-low-price side when normal price compete with ultra-low-price, payoffs when all travel agencies choose ultra-low-price, namely payoff 1, payoff 2, payoff 3 and payoff 4 respectively. Based on that, the market will be influenced by four possibilities:

If payoff 2 > payoff 4, meanwhile payoff 1 > payoff 3, normal price is the strictly dominant strategy, so all travel agencies will choose it.

If payoff 2 < payoff 4, meanwhile payoff 1 < payoff 3, ultra-low-price is the strictly dominant strategy, and all travel agencies shall choose it.

If payoff 2 < payoff 4, meanwhile payoff 1 > payoff 3, the starting frequency is decisive. If it is less than  $\frac{(d-b)}{(a-c+d-b)}$ , all travel agencies will eventually give up normal price and adopt ultra-low-price. If the number is over  $\frac{(d-b)}{(a-c+d-b)}$ , those adopt ultra-low-price will disappear and all agencies choose normal price.

If payoff 2 > payoff 4, payoff 1 < payoff 3, the number of travel agencies adopt normal price will hold firm around  $\frac{(d-b)}{(a-c+d-b)}$ .

In conclusion, the existence of ultra-low-price tour is evitable as long as there is a payoff difference. If government wants to eliminate it from market, it must meet two requirements: payoff 1 is always bigger than payoff 3 and payoff 4 is the lowest one.

## 2.2 Hotelling Models

Above analysis offers two requirements for the elimination of ultra-low-price. And the reason why those two requirements never be satisfied can be found based on the Hotelling Model.

Hotelling's Principle of market competition is developed by Harold Hotelling in 1929[2], the principle refers mainly to spatial competition. It can be applied to a firm's location decision [3], price competition [4], or in this example, to analyse price competition among travel agencies.

If the price of a tour route is presumed to be linear as Fig.1 shows, and with 12 units in total, customers target prices can range from 0 to L, so a travel agency can set a price at any point in the interval (0, L), with customers normally choose the travel agency with a price closest to their budget (higher or lower than budget is accepted). According to the Hotelling Principle, eventually the product offers of the travel agencies tend to concentrate in position B, and form an average price  $P_m$ .

In Fig.1(A), when a price  $P_1$  appears, which is lower than  $P_m$ , it will take 5.5 units from  $P_m$ , including all those from 0 to 5 and half a unit from A to B. At this time  $P_m$  will still have all the remaining units, 6.5 in total. In competing against  $P_1$ , it should have an advantage and survive to the end. If, however, a luxury tour aiming at the higher-income customer enters the market with a price set at  $P_h$ , it will take 3.5 units from  $P_m$  leaving it with only 3 units, and a lost advantage against  $P_1$ .

In Fig.1(B), an even lower price  $P_{12}$  appears, taking away most of  $P_1$ 's units and forcing it to move back to  $P_m$ . Therefore, in the market, there are only three prices remaining:  $P_{12}$ ,  $P_m$  and  $P_h$ . In such circumstance,  $P_m$  takes 4.5 units,  $P_{12}$  takes 4 units and  $P_h$  takes 3.5 units.  $P_m$  therefore, has the biggest advantage, and only when an ultra-low-price is set at  $P_{12}$ , can a normal pricing strategy win the competition and force the ultra-low-price offer to move back to a normal price. However, the number of

such cases will be minimal, because most of the ultra-low-prices will be set at between  $P_{l2}$  and  $P_m$ , maintaining their advantage against normal prices. So, if there are prices between  $P_{l2}$  and  $P_m$ , payoffs when all travel agencies choose normal price is always less than payoffs of choosing to be an ULPT when others still set at a normal price. And that's the exact reason why there is always some ULPT agencies. They are small in number, but are always difficult to be eliminated completely

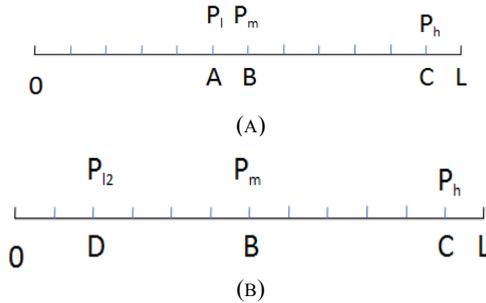


Fig. 2. Hotelling model of prices offered by travel agencies

### 2.3 Mental Accounting

Above analysis explains tour agencies' behavioural tendencies of ULPT. But a tour can't start without customers. The reason why customers join in ULPT can be explained by the theory of Mental accounting.

Mental accounting is a behavioural economics concept proposed by Richard Thaler in 1999. He noted that people place different values on money, which leads to irrational decision-making [5]. People set budgets for specific categories of expenditure, such as entertainment, and tend to track their consumption against the pre-set mental budget neglecting expenses in other accounts, which consequently may lead to either overconsumption or underconsumption [6].

That is exactly the reason why tourists join in the ultra-low-price tour. When a person decides to participate in a travel tour, the money paid to travel agencies usually include transportation expense, accommodation fees, kinds of tickets. Those expense are all explicit cost, and are easily to be compared with other agencies' offers. If he categorizes travel expense into entertainment consumption, he may not want to spend much money on it. He is likely to limit the budget paid to travel agency in order to save money. This will easily put them into a trap of ULPT by offering them an extremely low price.

### 3 Case study of China

In 2021, Ministry of Culture and Tourism of The People's Republic of China revealed 10 ULPT cases<sup>1</sup>. Details of prices are as Table 1. Shows.

**Table 1.** ULPT Cases revealed by Ministry of Culture and Tourism of The People's Republic of China

	<b>Price for Tour per person</b>	<b>Compulsory or Cheated Expense in total</b>
Case 1	0 rmb for participants <55 years old 380 rmb for participants >55 years old	90,000 rmb in total
Case 2	880 rmb	50,000 rmb
Case 3	800 rmb	No information
Case 4	198 rmb	Tourist found it a ULPT and reported to the government before it started.
Case 5	98 rmb	600 rmb
Case 6	0 rmb	2600 rmb
Case 7	0 rmb	500 rmb
Case 8	0 rmb	240 rmb
Case 9	0 rmb	880 rmb
Case 10	0 rmb	Tourist refused the compulsory shopping

From the above cases, it can be seen that the price of ULPT is very cheaper than normal price. In case 1, the tour is from Hubei province to Hongkong and Macau. Usually, the tour agency charges at least 5000 rmb for a 6 days tour. The luxury trip cost 10,000 rmb or even more. People with no limit in budget will choose luxury trip, for they can have a better travel experience. The other agency will have to fight for the left tourists. They offer good serve as best as they can, and charge as least as they have to. Actually, they can't make much profit through a 5000 rmb tour considering the high price level at Hongkong and Macau. But the ULPT charges only 380 rmb, less than one percent of the normal price. And it even seems free for those under 55 years old. So, those cheap ultra-low prices are more competitive than normal prices, and it will attract people who think it's a good deal to pay a visit by using less money than other agencies. And during the visit, they will soon find although their travel fees are very cheap, they have to spend much more money on other places at a much higher price than other places. At most time, they are forced to buy goods or participate in activities they don't really want. That's exactly how the travel agency make money from an ultra-low-price tour.

<sup>1</sup> See [https://www.sohu.com/a/470027968\\_120137119](https://www.sohu.com/a/470027968_120137119).

Those victims are often the elderly people. Those people categorize expense into daily expense, entertainment, investment, health care...etc. No matter rich or poor, they usually are willing to spend money on investment to real estate and health care. In their view, buying an apartment for children is helpful for their marriage and health care can help oneself live longer. As for entertainment, it is considered the most unnecessary expense. So, the budget is often tight, and the only thing they care about is the price. With limited travel experience, they can't tell the difference between a ULPT and a normal sales discount, which will lead them to choose the lowest one instinctively.

Another group of victims are those with a certain knowledge of ULPT. They are aware that the tour itinerary may include compulsory shopping, but since they have demands for local specialties, they still join in it. Their thoughts are like this: the travel fee is very low, so they can save money from it. However, like a low price of a food item may lead to overconsumption rather than substitution [7], a low price of travel fee helps them save money, but soon they will find themselves spent much more on buying useless souvenirs or taking activities they didn't plan to. In case 4 and case 5, the travel fee was free, but the expense spent on a shopping is much higher than usual. In case 4, tourist spent 500 rmb buying local goods, and in case 5, three tourists spent 2600 in total. Later, they didn't only find the price is much higher than other shops, but also the quality problems with products. If they take part in tours with normal prices, it will cost them more travel expense, but they can avoid losses later.

In a word, the tourist market can be subdivided into different groups. ULPT agencies use extremely low price to attract tourists who are tight in entertainment budget and very sensitive to price. Those want to save money or think they can balance all kinds of expense in the trip, will actually loss much more money than joining a tour with normal price.

## 4 Suggestions

Although it's difficult to completely eliminate ULPT, it is possible to limit their behaviours and reduce the loss caused by them.

Firstly, governments should implement stricter penalties on ULPT agencies that forcing tourists to buy products at a unnormal high prices or even shoddy products. This is deception and should be severely punished. Only returning the improper income they earned from tourists is never enough. Those shops should be shut down and the agencies should be forbidden to engaged in the tourism industry.

Secondly, governments should work with local communities to better inform and educate people about the travel market. The elderly like to travel after retirement, but it's difficult for them to distinguish between a normal tour and an ultra-low-price tour, they are likely to choose the travel agency offering the lowest price. What governments can do is to inform them of the average price of a tour route and what traps may appear during the travel. For example, local governments can gather pricing information of routes in demand amongst the elderly, and post that information in

public places for them to read. An all-out effort is necessary to help them understand the essence of ultra-low-price tours and to assist them in avoiding such offerings.

Also, tourism industry can make contribution to lower the probability of ULPT's occurrence. They should stop using price as a way to attract tourists. Low price weakens profit, making some of them have to conduct improper action in order to survive. Meanwhile, they can work together to boycott ULPT agencies. For example, Association of Tour Guides can ask its members not to work for ULPT agencies and report to government if they find cheating, compulsory shopping activities in their tour. A ULPT agency can't work without professional staffs. And its employees know better than tourists about the company's operation.

## 5 Conclusions

According to the analysis above, the existence of ULPT is an objective result. As long as the profit of ULPTs is higher than those of normally priced tours, there's always someone who want make profit by doing it. So, it's hard to eliminate all ULPT agencies. Based on that, government should make strict policy to punish those ULPT agencies, not only deprive the profit from them, but also forbidden them to engage in related industry again. Meanwhile, local community can provide more information to the elderly people and help them to distinguish the ULPT agencies. And tourism agencies should stop competing on price and attract tourist by provide better service or develop more special travel route. It's possible to defeat ULPT if all everyone works together.

## Acknowledgment

This article is sponsored by the Heritage Tourism Study Center of the Tourism Department of the Sichuan Government: Study of Efficiency of World Tourism Heritage Sites in Sichuan, based on data development analysis (19YL -04). and Research Program of Leshan Normal University: Study of Commercial Intellectual Property Operation of Food Tourism in Sichuan World Heritage Sites (WZD017);

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